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10/792,023	03/03/2004	Tanya Smith Richardson	M0723.70001US00	1360

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EXAMINER
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KINNEY, ANNA L

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 09/06/2006

Please find below, and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/792,023	Applicant(s) RICHARDSON, TANYA SMITH	
	Examiner Anna Kinney	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 7/31/06.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 32-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/23/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims 1-31, in the reply filed on July 31, 2006, is acknowledged. The traversal is on the ground(s) that the subject matter of all claims is related and the search of the entire application could be made without serious burden. This is not found persuasive because the applicant failed to provide an appropriate showing or evidence to rebut the showing of serious burden set forth in the restriction requirement as is required by MPEP 803 – merely arguing that the search of the entire application could be made without serious burden does not meet the requirements of MPEP 803.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 9, and 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan et al (US 5,529,660) in view of Dubreuil (M. Dubreuil, "Introduction to Fluorescence in Fiber Recycling", Progress in Paper Recycling, August 1995, pp. 98 and 104-105).

With respect to claim 1, Kogan discloses a method of reducing fluorescence in recycled pulp (Title) comprising: processing waste paper to form a mixture comprising

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pulp and fluorescent agents (col. 2, lines 36-42); and adding chlorine chemicals such as hypochlorite (col. 1, lines 34-38, col. 2, lines 28-31, and col. 6, lines 52-56) to the mixture to interact with the fluorescent agents thereby reducing fluorescent activity of the fluorescent agents.

Kogan does not disclose expressly that the chlorine chemicals include chlorine dioxide.

Dubreuil discloses that chlorine dioxide is a bleaching chemical that will decrease or destroy residual fluorescence (pg. 104, col. 2, 2nd and 3rd paragraphs after the subtitle "Impact of bleaching agents on residual fluorescence").

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use chlorine dioxide as described by Dubreuil as the chlorine chemical of Kogan to obtain the invention as specified in claim 1.

The motivation would have been that chlorine compounds do bleach and attack fluorescent dyes (Kogan, col. 1, lines 34-39), and that the formation of AOX and chloroform with chlorine based chemicals have led to the adoption of ECF bleaching sequences (Dubreuil, pg. 104, col. 2, 2nd and 3rd paragraphs after the subtitle "Impact of bleaching agents on residual fluorescence").

With respect to claim 2, Dubreuil discloses adding quaternary polyamides, a polymeric material, to the mixture (pg. 105, col. 1, 1st paragraph under the subtitle "Residual Fluorescence Quenchers").

With respect to claim 9, Kogan discloses adding ozone, a bleaching agent, to the mixture in a bleaching step prior to adding the chlorine compounds (i.e., chlorine dioxide solution) to the mixture (col. 2, lines 28-31).

With respect to claims 21 and 25, Kogan discloses processing the pulp mixture after adding the chloride dioxide solution to form a pulp sheet, and further processing the pulp sheet to form paper (col. 4, lines 59-67 and col. 5, lines 48-51).

With respect to claims 22, 23, 26 and 27, Kogan discloses that, depending upon the pulp source, a fluorescence index as low as 0.17 resulted in handsheets produced from the tested pulps, which the Examiner construes to be less than about 2.0% (Fig. 1). Furthermore, Dubreuil discloses that values as high as 0.19% residual fluorescence are comparable to a white noise (pg. 104, col. 1, ¶ 4, lines 6-8), which the Examiner construes to be substantially zero. At the time of the invention, it would have been obvious to a person of ordinary skill in the art that if the pulp handsheet contains a fluorescence component of substantially zero, the resulting paper product would similarly have a fluorescence component of substantially zero.

With respect to claims 24 and 28, Kogan and Dubreuil do not disclose expressly any phosphorescence activity. At the time of the invention, it would have been obvious to a person of ordinary skill in the art that using the same reagents in the same method steps as those claimed would result in the same phosphorescence activity, or lack thereof, in the pulp, and subsequently the paper, product.

With respect to claim 29, Kogan discloses that the paper is suitable for use in a food grade application (col. 4, lines 61-67).

With respect to claim 30, Dubreuil discloses that the fluorescent agents are FWAs; i.e., whitening agents (pg. 98, col. 1, paragraph 2).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan and Dubreuil as applied to claim 2 above, and further in view of Hossain et al (US 3,354,027).

With respect to claim 3, Kogan discloses that a conventional bleaching chemical can be added as the last chemical to the bleaching liquor (col. 4, lines 31-33). Kogan further discloses that the bleaching step follows a deinking step (col. 2, lines 36-42). As discussed above, Dubreuil discloses the use of chlorine dioxide (a conventional bleaching chemical) on recycled fibers.

However, Kogan and Dubreuil do not disclose expressly adding a polymeric material.

Hossain discloses a process for deinking waste paper (Title), in which the waste paper is treated with a polymer (Abstract) before the pulp is bleached (col. 2, lines 57-59). The method of claim 2, wherein the chlorine dioxide solution is added to the mixture after the polymeric material is added to the mixture.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to add the chlorine dioxide of Dubreuil after a polymeric material as described by Hossain in the method of reducing fluorescence of Kogan and Dubreuil to obtain the invention as specified in claim 3.

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The motivation would have been that the dual electrical characteristics of polyampholytes are particularly suitable for exerting a polar attraction for ink particles, while maintaining an overall repulsion for cellulose fibers (Hossain, col. 2, lines 1-4).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan, Dubreuil, and Hossain as applied to claim 3 above, and further in view of De Ceuster et al (US 4,347,099).

With respect to claim 4, Kogan, Dubreuil, and Hossain do not disclose expressly that the chlorine dioxide solution is added less than 1 minute after a polymeric material.

De Ceuster discloses a process for the reclamation of waste paper (Title) in which a carboxylated polymer can be used in any stage of the reclamation process for waste paper (col. 5, lines 8-10), including bleaching (col. 5, lines 20-24). The method of claim 3, wherein the chlorine dioxide solution is added to the mixture within a period of time of less than 1 minute after the polymeric material is added to the mixture.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to add a carboxylated polymer as described by De Ceuster within whatever period of time is appropriate before addition of the chlorine dioxide solution of Kogan, Dubreuil, and Hossain (depending upon such variables as the equipment used) provided that the bleaching chemical is added last, as disclosed by Kogan, to obtain the invention as specified in claim 4.

The motivation would have been that an appreciable gain in whiteness has been observed (col. 8, lines 64-68).

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan and Dubreuil as applied to claim 1 above, and further in view of Dence et al (Carlton Dence and Douglas Reeve, Eds., Pulp Bleaching Principles and Practice, TAPPI Press, 1996, pp. 388-389).

With respect to claims 5-6, Kogan discloses that any conventional bleaching conditions can be used (col. 4, lines 43-44). Kogan and Dubreuil do not disclose expressly what pH is applied prior to adding chlorine dioxide.

Dence discloses a method of bleaching with chlorine dioxide (Title, pg. 389), in which sodium hydroxide is added to the pulp before addition of chlorine dioxide to increase the starting and final pH (pg. 388, col. 2, last line – pg. 389, col. 1, lines 1-3). Dence further discloses initial pH values ranging from about 2 to about 11.5 (pg. 388, Fig. 13), which encompasses the claimed range of between about 9.8 and about 10.4 for claim 5, and the claimed value of about 10.2 for claim 6.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to adjust pulp pH prior to chlorine dioxide bleaching as described by Dence in the bleaching method of Kogan and Dubreuil to obtain the invention as specified in claims 5-6.

The motivation would have been to achieve a particular end pH (pg. 389, col. 2, 1<sup>st</sup> full ¶, lines 1-3), and that the rate of pH decrease is extremely high with most of the change occurring in the first 10 minutes of reaction (pg. 388, col. 2, Section 3.3, lines 3-6).



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Claims 7-8 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan and Dubreuil as applied to claim 1 above, and further in view of Gupta (US 4,244,777).

With respect to claims 7 and 8, Kogan discloses that any conventional bleaching conditions can be used (col. 4, lines 43-44). Kogan and Dubreuil do not disclose expressly what consistency is maintained prior to chlorine dioxide application.

Gupta discloses a method of bleaching recovered dyed paper (col. 1, lines 15-17), wherein the pulp mixture is treated with chlorine dioxide after adjusting the consistency of the mixture to be 10% (col. 1, lines 40-41), which contains 1 specific point within the claimed range of between about 8% and about 12% for claim 7, and is 1 specific point within the claimed range of about 10%.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to adjust pulp consistency as described by Gupta in the method of reducing fluorescence of Kogan and Dubreuil to obtain the invention as specified in claims 7-8.

The motivation would have been that the usual conditions for chlorine dioxide bleaching would be used (col. 2, lines 18-19).

With respect to claim 15, Gupta discloses adding chlorine dioxide in a concentration of as low as 0.25% up to 4% (col. 1, lines 27-30), which the Examiner construes to convert to 2.5 g/L up to 40 g/L, which contains 1 specific point within the claimed range of between about 1.0 grams/liter and about 3.0 grams/liter, to the mixture.

With respect to claim 16, Gupta discloses a concentration as low as 0.25%, which the Examiner construes to convert to 2.5 g/L, as discussed in the rejection of claim 15, above. The claimed amount of about 2.4 grams/liter includes amounts slightly above and slightly below 2.4 g/L. The 2.5 g/L disclosed by Gupta is about 2.4 g/L.

Claims 10, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan and Dubreuil as applied to claim 9 above, and further in view of Hankins et al (US 5,755,926).

With respect to claim 10, Dubreuil discloses hydrogen peroxide as a bleaching agent (pg. 104, col. 2, line 1). Kogan and Dubreuil do not disclose expressly applying hydrogen peroxide prior to chlorine dioxide.

Hankins et al discloses a method of recovering fibers from mixed grades of waste paper (Abstract), wherein the mixture is treated with peroxide (col. 9, lines 44-46) prior to adding chlorine dioxide (col. 10, lines 22-28).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply peroxide prior to adding chlorine dioxide as described by Hankins in the bleaching method of Kogan and Dubreuil to obtain the invention as specified in claim 10.

The motivation would have been to bleach fibers and produce lignin surfactants that aid in the separation of contaminants from the fibers, enabling waste cellulosic material from any waste source to be processed together (col. 4, lines 42-52).

With respect to claim 11, Hankins discloses controlling the application (i.e., flow) rate of the bleaching agent added (col. 8, lines 1-4) to the mixture in the bleaching step

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such that the concentration of the bleaching agent is substantially zero after the bleaching step (col. 9, lines 50-54).

With respect to claims 12-14, Kogan discloses that any conventional bleaching conditions can be used (col. 4, lines 43-44). Kogan and Dubreuil do not disclose expressly what pH or temperature is applied.

With respect to claim 12, Hankins discloses that the hydrogen peroxide bleaching step is operated at a temperature of from 70°C to 110°C (col. 8, lines 1-4; converts to 158-230°F), which encompasses the claimed range of greater than about 200°F and less than 230°F, and contains 1 specific endpoint (230) of the claimed range.

With respect to claims 13-14, Hankins discloses that the hydrogen peroxide bleaching step requires an initial pH above 9.5, such as between 9.5 and 12.0 (col. 7, lines 54-56), which encompasses the claimed range of between about 11.0 and 11.4 for claim 13 and the claimed value of about 11.2 for claim 14.

Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan and Dubreuil as applied to claim 1 above, and further in view of GB 1 396 139.

With respect to claims 17 and 18, Kogan and Dubreuil do not disclose expressly that the oxidation reduction potential of the mixture is adjusted.

GB '139 discloses bleaching waste paper pulp with chlorine dioxide (pg. 2, col. 1, lines 63-67) and further discloses a second phase in which the waste paper pulp is treated with sodium hydroxide (pg. 3, col. 2, lines 39-46) after the step of adding chlorine dioxide solution. The Examiner construes that the sodium hydroxide treatment

provides an oxidation reduction potential value of less than or equal to zero and between about 0 and about -200.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a second phase of chlorine dioxide bleaching in which pH is adjusted as described by GB '139 in the method of reducing pulp fluorescence of Kogan and Dubreuil to obtain the invention as specified in claims 17-18.

The motivation would have been that ClO<sub>2</sub> is an effective bleaching agent for the treatment of waste paper pulp (pg. 2, col. 1, lines 63-65) and that some further pH adjustment may be required (pg. 2, col. 2, lines 108-113).

With respect to claim 19, the Examiner considers sodium hydroxide to be a neutralizing solution.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kogan, Dubreuil, and GB '139 as applied to claim 19 above, and further in view of Sparrow (US 2,958,622).

With respect to claim 20, Kogan, Dubreuil, and GB '139 do not disclose expressly the use of sodium bisulfite.

Sparrow discloses a method of treating fibrous vegetable materials containing cellulose with chlorine dioxide (col. 1, lines 10-12 and col. 3, lines 52-56), followed by a brief antichlor treatment (i.e., neutralization, col. 3, lines 62-65) with sodium bisulfite (col. 3, lines 70-73).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use sodium bisulfite as described by Sparrow in place of sodium

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hydroxide in the bleaching process of Kogan, Dubreuil, and GB '139 to obtain the invention as specified in claim 20.

The motivation would have been to react with and destroy residual chlorine (col. 3, lines 70-73).

Claim 31 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kogan et al.

With respect to claim 31, this claim is a product by process. See MPEP § 2113. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself (i.e., differences in product characteristics), and not on its method of production. In the present instance, all that is claimed is a recycled pulp or paper article, which is shown by Kogan (col. 4, lines 59-67 and col. 5, lines 48-51). Therefore, the Examiner can discern no significant differences between the claimed product and the product of Kogan.

In the event any differences can be shown for the product of the product-by-process claim 31, as opposed to the product taught by the reference Kogan, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results; see also *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,294,047 shows methods for reducing fluorescence in paper-containing samples. Roy (Brian P. Roy, "How Do You

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Remove/Destroy/Extinguish Fluorescent Material in Deinked Pulp?", Progress in Paper Recycling, Nov. 1994, pp. 74-79) discusses the use of chlorine dioxide for destroying FWAs. US 5,458,736, 5,770,010, and 6,409,881 show the use of chlorine dioxide to treat recycled fiber pulp.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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